

## REMARKS

Claims 18, 23-24, 26, 33 and 36-39 are pending and are currently finally rejected. Claims 18, 23-24, 33, 36-37 and 39 are rejected under 35 U.S.C. §103(a) over Posner et al. (U.S. Patent No. 6,531,918) are Casebolt (U.S. Patent No. 5,774,344). Claims 26 and 38 are rejected over Posner et al. and also Jewell et al. (U.S. Patent No. 4,661,888). Claims 18, 23-24, 33, 36-37, and 39 are also rejected under §103(a) over Powell et al. (U.S. Patent No. 4,612,512) and Casebolt; while claims 26 and 38 are rejected over Powell et al., Casebolt and Jewell et al.

The Applicants submit further arguments and amendments herein, and assert that the claims are allowable over the cited art. Pursuant to a telephone discussion with the Examiner, it was indicated that the suggested amendments would require additional searching and more consideration. Therefore, an RCE is also filed with the Response for consideration of the Response.

## SECTION 103 REJECTIONS OVER POSNER ET AL. AND CASEBOLT

The rejections under Posner et al. and Casebolt are raised based upon a combination wherein the Examiner argues that the amplifier of Posner et al. inherently is formed on a circuit board and that the circuit board will be provided with a housing. The Casebolt reference is simply relied upon for that housing.

However, as the Examiner is aware and, as is well established under §103 jurisprudence, there must be a teaching to make such a combination. In that teaching, the problem that is addressed by the present invention must be recognized to motivate

a person of ordinary skill in the art to make the combination. Nowhere in Posner et al. or Casebolt is the problem of putting two amplifier circuits directly onto the same circuit board addressed. The Posner et al. reference is completely silent with respect to the physical layout of the main amplifier circuits and error amplifier circuits in any fashion. Simply saying, as the Examiner argues, that the Posner et al. device would inherently have to have a single circuit board is a significant leap in logic and is not taught by that reference. Specifically, a person of ordinary skill in the art could simply incorporate various components into multiple different housings and packages, even though they all interact to form a power amplifier as was done in various different ways in the prior art, as noted in the Background section of the pending application. Therefore, there is absolutely no teaching or mandate from the Posner et al. reference to a person of ordinary skill in the art that the circuit must be incorporated onto a single circuit board.

Turning now to Casebolt, that reference discusses an RF shield for a unitary circuit card, but really is directed to containing RF emissions from escaping the enclosure, rather than worrying significantly about how RF interference from one circuit, such as one amplifier circuit may affect another amplifier circuit. While Casebolt notes enhancing internal and external shielding, it does not make any distinction with respect to the circuits themselves or provide any teaching of shielding one circuit more robustly than the other as is accomplished by the claimed invention using thicker walls and broad islands.

The present invention provides an amplifier that utilizes two different amplifier subcircuits. Each of those subcircuits is directly mounted together on a single circuit board. They are not mounted with other metal shielding components and then placed

on some common substrate. Rather, they are each mounted directly to a single circuit board to enhance the manufacturability of the amplifier, reduce the overall costs and complexities of the amplifier, and still provide adequate shielding between the two amplifier subcircuits. Furthermore, within one of the lid structure or the chassis body, there is a plurality of generally solid sidewalls that extend therefrom to contain and isolate subcircuits of the main amplifier subcircuit and subcircuits of the error amplifier subcircuit.

But then a further enhancement is provided, addressing the needs to isolate two amplifier subcircuits, which are directly mounted together on a single circuit board. Specifically, one of the lid structure or the chassis body further includes a generally solid dividing wall of greater thickness than the sidewalls that separate the subcircuits within one of the amplifier circuits. The dividing wall of greater thickness extends between the main amplifier circuit and the error amplifier circuit. The greater thickness provides enhanced RF shielding between those circuits. This is necessary because of the function of both amplifiers.

Furthermore, the dividing wall has multiple broad islands extending therefrom and passing through the multiple cutouts formed in the circuit board. These broad islands provide necessary grounding and the enhanced isolation that is necessary for amplifier circuits that are directly mounted together on a single circuit board. The multiple pin walls of Casebolt are not generally solid, nor is there a thicker wall with broad islands taught. More specifically, there is no teaching from the combination of Posner et al. and Casebolt with respect to such features as recited in independent claims 18, 33, and 39. Thus, those claims are not rendered obvious by that combination

of references under §103. There is no teaching in either reference of the direct mounting of two different amplifier subcircuits on a single circuit board. Therefore, there is simply not the motivation to combine the references to address the issues addressed by the invention. Furthermore, even if such references were combined, there would be no teaching of the invention as claimed, as even the combined references do not teach all the claimed elements. Accordingly, the Applicants submit that the independent claims 18, 33 and 39 are allowable. The dependent claims 23-24, 26, and 36-38 are allowable for the same reasons as discussed above and further because they teach unique combinations of elements not taught by the cited art.

The Jewell et al. reference is cited for providing nothing more than a gasket and, thus, does not provide the teaching lacking in the other two cited references, such that a combination of all three references would render any of the claims obvious.

Turning now to the combination of Powell et al. and Casebolt, the Applicants note that Powell et al. teaches placing two amplifiers within a common package. However, the amplifiers are not mounted directly onto a single circuit board, which is one of the features that provides lower cost and greater manufacturing efficiency in the present invention. Rather, the teaching in Powell et al. is that the amplifiers are mounted on individual substrates and then must be again brought together as packages onto the actual circuit board. As such, there are multiple substrates utilized and multiple steps to have the amplifier components positioned with the other components on the circuit board. Therefore, the Powell et al. clearly does not teach a main amplifier circuit and an error amplifier circuit, each directly mounted together on a single circuit board. Rather each of the two amplifier modules 14 and 50 must be

mounted on separate copper heat sinks, which become part of the signal ground plane for those devices. Such multiple fabrications defeats one of the significant advantages of the invention wherein the main amplifier subcircuit and error amplifier subcircuit are each directly mounted together on a single circuit board.

While the Powell et al. reference recognizes isolation between the two amplifier modules provided by an intermediate wall as shown, there is no recognition of multiple varying levels of isolation provided between various subcircuits of each amplifier circuit. That is, the Powell et al. reference is silent regarding the use of sidewalls separating subcircuits of the main and error amplifier circuits, and then a solid dividing wall, of greater thickness than the sidewalls with multiple broad islands to separate the error amplifier and its components and the main amplifier and its components. As noted above, the Casebolt reference is silent with respect to any issue addressing separating two amplifiers each directly mounted together on a signal circuit board and the claimed physical structures necessary to achieve isolation.

As such, there is no teaching provided by Powell et al. and Casebolt with respect to generally solid sidewalls that define subcavities within a main amplifier cavity and subcavities within an error amplifier cavity wherein one of the lid structure and chassis further include a generally solid dividing wall of greater thickness than the sidewalls that extends between the main amplifier circuit and the error amplifier circuit. Nor is there a teaching wherein that dividing wall has multiple broad islands extending therefrom to pass through cutouts in the circuit board for electrically coupling the lid structure and chassis body for robust isolation between the main and error amplifier subcircuits. One of the ways that the Powell et al. reference may avoid the problem addressed by the

present invention may be by placing the main and error amplifier subcircuits on two individual copper metal substrates for grounding instead of mounting the main and error amplifiers directly to the single circuit board.

Accordingly, pending independent claims 18, 33, and 39 are allowable over the cited references of Powell et al. and Casebolt because those references do not teach each and every one of the limitations recited in the claims such that the inv would be obvious under §103. Therefore, the rejected claims are allowable over that combination of cited art. Furthermore, the dependent claims, which depend from any of independent claims 18, 33, and 39, are allowable for the same reasons and, in addition, recite unique comminations of elements not taught by the cited art.

With respect to claims 26 and 38 in combination with the Jewell et al. reference, for the same reason as discussed above, the Jewell et al. reference fails to provide the teaching and elements missing in Powell et al. and Casebolt such that the three-reference combination would render obvious the claimed invention.

## CONCLUSION

The Applicants submit that the currently pending claims are in an allowable form and, therefore, request a Notice of Allowability of the application at the Examiner's earliest convenience. If any issues remain in the case which might be handled in an expedited fashion, such as through a telephone call or an Examiner's Amendment, the Examiner is certainly encouraged to telephone the Applicants' representative or to issue an Examiner's Amendment.

The Applicants enclose a check for \$450.00 for a two-month extension of time to file a Response herein. If any additional fees are necessary, the Commissioner may consider this to be a request for such and charge any necessary fees to Deposit Account 23-3000.

Respectfully submitted,

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